



Blastobasinae (Lepidoptera: Gelechioidea: Coleophoridae) of Thailand, Part 1. Four New Species of *Calosima* Dietz, 1910.

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Abstract Four new species of *Calosima* Dietz, 1910 (Holcocerini); *Calosima albafasciella*, *C. albefasciata*, *C. malikuli*, and *C. moriutii* are described from Thailand. Photographs of the imagoes and illustrations of the male and female genitalia are provided as available.

Key words Asia, Holcocerini, taxonomy

In 1981, Japanese entomologists embarked on a long-term survey of the Lepidoptera of Thailand, in 16 Thai provinces during several expeditions. The total collection of Thai Lepidoptera consisted of about 40,000 specimens representing 70 families and was deposited (ainly in the collection of the Entomological Laboratory, University of Osaka Prefecture, Sakai, Osaka, Japan, and the Thailand Department of Agriculture, Bangkok. A more detailed account of the expeditions can be found in Moriuti (1987).

The following study is the first of at least three that will describe the Blastobasinae collected during the expeditions. This study documents the first records of Holcocerini from Thailand. Specimens of this study are from the northern province of Chiang Mai, the central province of Nakhon Nayok, and the southwestern province of Prachuap Khiri Khan.

Calosima Dietz, 1910, are known mostly from the New World with about 26 described species, plus a few undescribed species from Africa (unpublished data) and those treated herein. The genus is defined by having an aedeagus basally spheroidal or enlarged, valva with a secondary articulatory process present, gnathos with a median curved ridge or lobe, and ventral margin of juxta emarginate (Adamski and Brown, 1989). The generic limits of *Calosima* are vague because little is known of the African, eastern European, Asian, and Australian fauna, and a phylogenetic analysis of existing Holcocerini for these regions would be inconclusive because so little is known for this taxon.

Kornerup and Wanscher (1978) was used as a color standard for descriptions of the adult vestiture. Genitalia were dissected as described by Clarke (1941), except mercurochrome and chlorazol black were used as stains. Pinned specimens were examined with dissecting and compound microscopes. Measurements of the wings were made with a calibrated ocular micrometer. All type material is deposited in the Entomological Laboratory, University of Osaka Prefecture, Sakai, Osaka, Japan (UOP).

Key to the known adult *Calosima* (Holcocerini) of Thailand

- | | |
|----------------|---|
| 1. Male | 2 |
| – Female | 4 |

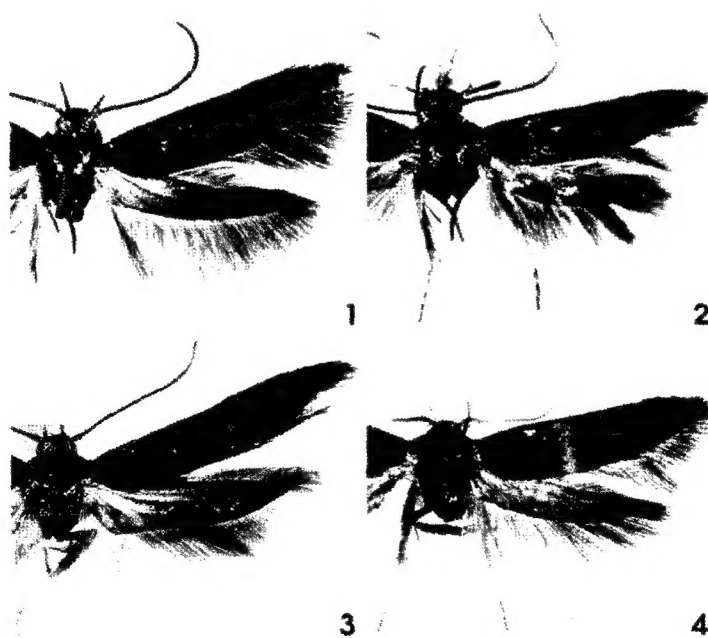
2. Frontoclypeus white *albafaciella*
 – Frontoclypeus with scales gray or pale gray tipped with white 3
 3. Uncus rooflike; ventral part of gnathos wide; ventrolateral margin of proximal flange slightly reflexed ventrally; apicoventral angle of lower part of valva acute (Fig. 5) *malikuli*
 – Uncus laterally flattened; ventral part of gnathos narrow; ventrolateral part of proximal flange protuberant; apicoventral angle of lower part of valva rounded (Fig. 6) *moriutii*
 4. Forewing with a narrow, white, transverse band near midlength (Fig. 4); eighth sternum deeply emarginate posteriorly; seventh tergum with spinelike setae (Fig. 8) *albafaciella*
 – Forewing without transverse band; eighth sternum not emarginate posteriorly; seventh tergum without spinelike setae (Fig. 9) *malikuli*

Calosima malikuli Adamski, n. sp.

(Figs. 1, 5, 9)

Diagnosis. Relationships of *Calosima malikuli* with other *Calosima* are difficult to determine because of its unique features. The rooflike uncus and acute apicoventral angle of the ventral part of the valva may be autapomorphic for the species.

Description. Head: Vertex and frontoclypeus with scales gray or pale gray tipped with white; outer surface of labial palpus gray intermixed with a few white scales, and white scales near apical part of segment II, inner surface white intermixed with a few gray scales; scape of antenna white intermixed with a few gray scales; flagellum gray intermixed with white scales basally, pale brown distally, flagellum wider basally and with more cilia in male than in female; proboscis white.



Figs. 1–4. Imagos of *Calosima* spp.: 1. *C. malikuli* (holotype); 2. *C. albafaciella* (holotype); 3. *C. moriutii* (holotype); 4. *C. albafasciata* (holotype).

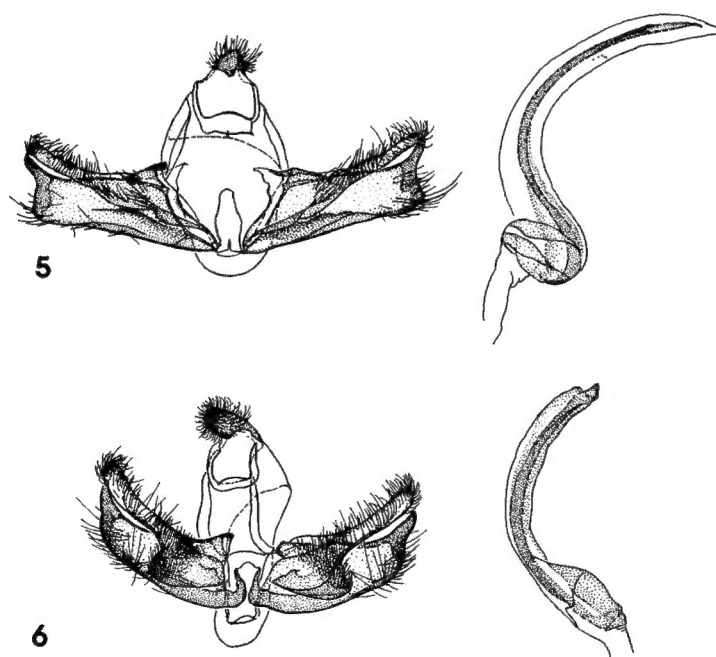
Thorax. Mesonotum and tegula with scales gray, tipped with white; legs with scales gray, tipped white, and with more white scales near apices of tarsomeres. Forewing (Fig. 1): Length 6.0–6.9 mm (2n): gray scales tipped with white intermixed with white scales; basal half white intermixed with two gray costal patches, one gray postanal patch extending to slightly beyond CuP, and the other wide patch extending from posterior margin gradually narrowing anteriorly to near middle of cell; distal half pale gray intermixed with patches of gray scales tipped with white; fringe gray tipped with white; undersurface gray. Hindwing pale gray, gradually darkening to apex.

Male Genitalia (Fig. 5). Uncus rooflike, setose, acutely curved posteriorly; arms of gnathos narrow, fused ventroposteriorly, forming a wide, free, ventral support for tuba analis; dorsoposterior margin of gnathos forming a broad lobe; upper part of valva with distal half with a digitate, setose lobe, basal part slightly dilated, ventrolateral margin of proximal flange slightly reflexed; lower part of valva rectangular-shaped, apicodistally narrowed, forming a stout spinelike process, apicoventral angle acute, setose; vinculum narrow; juxta elongate; aedeagus and aedeagal sclerite broadly curved, abruptly enlarged basally, acuminate; aedeagal sclerite recurved basally; anellus with several microsetae.

Female Genitalia (Fig. 9). Ovipositor telescopic, with 3 membranous subdivisions; eighth sternum setose on posterior half, widely and deeply emarginate anteriorly near ostium; ductus bursae elongate and parallel-sided, spinulate on one side on anterior half, slightly widening near corpus bursae; inception of ductus seminalis closer to ostium than to seventh segment; seventh tergum lacking spinelike setae; corpus bursae small, with a small, invaginated signum.

Type. Holotype, ♂, "THAILAND, Nakhon Nayok, Khao Yai, c. 800 m, 24 IX 1987, leg. Moriuti, Saito, Arita, & Yoshiyasu", "Lepidopt. Esped. to Thai. 1987. Coll. Ent. Lab. Univ. Osaka Pref", "♂ Genitalia Slide by DA 4318."

Paratype (1 ♀). "THAILAND, Prachaup Khiri Khan: Kui Buri (sea side), 14.X.1985, H.



Figs. 5–6. Male genitalia of *Calosima* spp.: 5. *C. malikuli* (holotype); 6. *C. albafaceiella* (holotype).

Kuroko, S. Saito, & Y. Arita", "Lepidopt. Esped. to Thai. 1987. Coll. Ent. Lab. Univ. Osaka Pref.", "♀ Genitalia Slide by DA 4320."

Etymology. *Calosima malikuli* is named in honor of Vichai Malikul, Scientific Illustrator, Department of Systematic Biology, Smithsonian Institution, Washington, D.C., for the training that I received from him while I was a student.

***Calosima albafaciella* Adamski, n. sp.**

(Figs. 2, 6)

Diagnosis. *Calosima albafaciella* is closest to *C. polyphagum* (Walsingham) by sharing a laterally-flattened uncus, a narrow gnathos, a pronounced proximal flange, and a broadly-curved aedeagus. *C. albafaciella* differs from the latter species by having a narrow, white, transverse band slightly beyond base of cell of the forewing, dorsoposterior margin of gnathos forming a broad median lobe, proximal flange more angular, and aedeagus bulbous basally.

Description. Head: Vertex and frontoclypeus white; outer surface of labial palpus with segment I and basal half of segment II brown, distal half of segment II, and a segment III pale brownish gray; inner surface pale brownish gray intermixed with a few brown scales; scape brownish gray intermixed with pale brownish gray scales, flagellum pale brown; proboscis pale brownish gray.

Thorax. Mesonotum and tegula brownish gray on anterior half, pale brownish gray on distal half; foreleg brown intermixed with pale brownish gray scales near apices of all segments and tarsomeres; pterothoracic legs brownish gray intermixed with few brown scales and pale brownish gray scales near mid segments and apices of all segments and tarsomeres. Forewing (Fig. 2): Length 5.5 mm (1n): gray scales tipped with white intermixed with pale brownish gray scales and white scales; basal half pale brownish gray with two gray patches along costa, one at base, one near midlength; a near white oblique band at midlength separating paler basal half (rom darker distal half; distal half pale brownish gray intermixed with patches of gray scales tipped with white; fringe gray tipped with white; undersurface brown. Hindwing pale brownish gray.

Male Genitalia (Fig. 6). Uncus basally narrow, abruptly enlarged dorsoventrally, forming a laterally flattened, apically rounded, setose projection; arms of gnathos narrow, fused ventroposteriorly, forming a narrow, free, ventral support for tuba analis; dorsoposterior margin of gnathos forming a broad median lobe; upper part of valva with distal half a digitate setose lobe, basal half with an abruptly dilated proximal flange; proximal flange subtriangular, distally setose; lower part of valva moderately wide basally, gradually narrowing, basally recurved dorsally, apicodistally narrowing dorsally, forming a stout spinelke process; apicoventral angle obtuse, setose; vinculum narrow, juxta elongate; aedeagus and aedeagal sclerite broadly curved, slightly enlarged at base; anellus with a few microsetae.

Female Genitalia. Unknown.

Type. Holotype, ♂, "THAILAND, Prachaup Khiri Khan, Kuf Buri (Sea side), 14 X 1985, H. Kuroko, S. Moriuti, T. Saito, & Y. Arita", "Lepidopt. Esped. to Thai. 1987. Coll. Ent. Lab. Univ. Osaka Pref.", "♂ Genitalia Slide by DA 4319."

Etymology. The species epithet is derived from the Latin *albus*, meaning white, and *facies*, meaning face, referring to the white frontoclypeus of this species.

***Calosima moriutii* Adamski, n. sp.**

(Figs. 3, 7)

Diagnosis. Relationships of *Calosima moriutii* with other *Calosima* are difficult to

determine because of its unique features. The entirely digitate upper part of the valva and elongate aedeagus with bifurcate and recurved apex appear autapomorphic for the species.

Description. Head: Vertex and frontoclypeus with gray scales tipped with white; outer and inner surfaces of labial palpus with segment I and basal half of segment II gray, distal half of segment II, and segment III white intermixed with a few gray scales; scape with gray scales tipped with white intermixed with white scales, flagellum pale grayish brown; proboscis gray.

Thorax. Mesonotum and tegula with scales gray tipped with white; legs with scales gray tipped with white, intermixed with pale gray scales near apices of all segments and tarsomeres. Forewing (Fig. 3): Length 9.9 mm (1n): Pale gray intermixed with white scales intermixed with gray scales and gray scales tipped with white; darker scales from anal area to termen, along outer margin to base of pterostigma; a narrow, gray streak demarcating CuP, and two subparallel streaks near midwing and end of cell; two large, gray, suffuse spots in cell, one near midcell and one near end of cell close to termen; gray submarginal spots near base of fringe; fringe gray tipped with white; undersurface brownish gray. Hindwing pale brownish gray, gradually darkening to apex.

Male Genitalia (Fig. 7). Uncus wide at base, gradually narrowing toward a rounded apex; slightly curved posteriorly, ventrally flattened, setose; arms of gnathos confluent with tegumen; dorsoposterior margin of gnathos slightly emarginate medially; upper part of valva entirely digitate, setose from beyond dorsal articulation to apex; lower part of valva moderately widened basally, gradually narrowing to a stout spinelike apical process; ventroapical angle slightly rounded; ventral margin setose from about third length to subapical area of apex; vinculum narrow; juxta small, ventrally emarginate deeply; aedeagus long, about twice the length of upper part of valva, slightly enlarged basally; aedeagus and aedeagal sclerite elongate and broadly curved, bifurcate and recurved apically; anellus with a few microsetae.

Female Genitalia: Unknown.

Type. Holotype, ♂, "THAILAND, Chiand Mai, Doi Inthanon, (ca. 1300 m), 1 & 3 XI 1985, S. Moriuti, T. Sato & Y. Arita", "Lepidopt. Esped. to Thai. 1987. Coll. Ent. Lab. Univ. Osaka Pref.", "♂ Genitalia Slide by DA 4321."

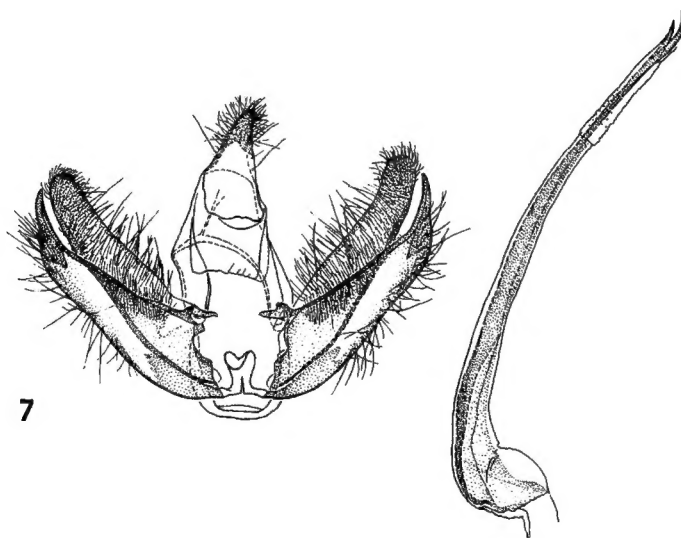


Fig. 7. Male genitalia of *C. moriuti* (holotype).

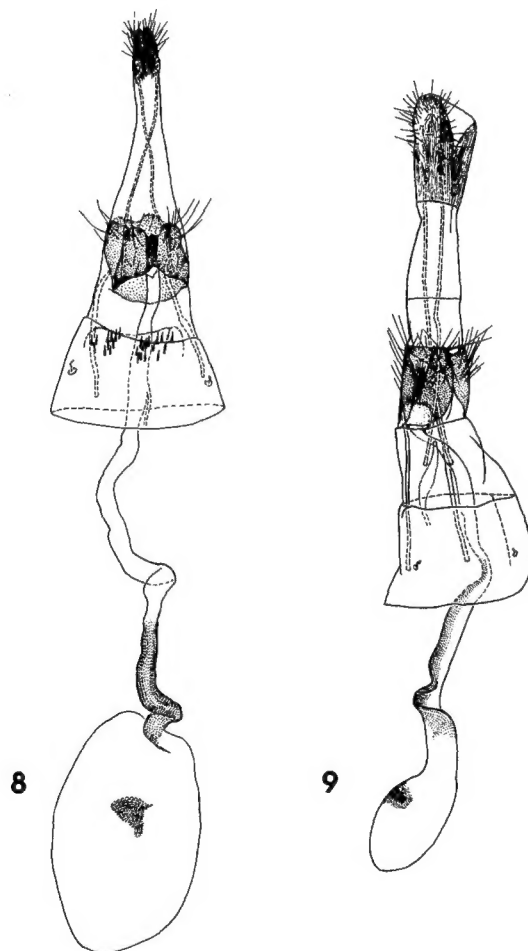
Etymology. *Calosima moriutii* is named in honor of Sigeru Moriuti of the Entomological Laboratory, College of Agriculture, University of Osaka Prefecture, Sakai, Osaka. Dr. Moriuti participated in the collection of and is responsible for the loan of the specimens examined during this study.

***Calosima albafasciata* Adamski, n. sp.**

(Figs. 4, 8)

Diagnosis. Relationships for *Calosima albafasciata* are difficult to hypothesize because the male is unknown for the species. The narrow, white, transverse band slightly beyond base of cell of the forewing is autpomorphic for the species.

Description. Head: Vertex and frontoclypeus white; outer surface of labial palpus with article I and basal half of article II gray intermixed with pale gray scales, distal half of article II and article III gray; inner surface similarly patterned, but with more white scales on basal half of article II; scape basally gray, distally white, flagellum with basal 8–10 flagellomeres



Figs. 8–9. Female genitalia of *Calosima* spp.: 8. *C. albafasciata* (holotype); 9. *C. malikuli* (paratype).

gray, distal flagellomeres white; proboscis white.

Thorax. Mesonotum and tegula gray; legs pale gray intermixed with a few gray scales tipped with white, and white scales near middle and apices of all segments and tarsomeres. Forewing (Fig. 4): Length 5.9 mm (n = 1): Gray, with a narrow, white, transverse-band slightly beyond base of cell; undersurface brown. Hindwing: pale gray, gradually darkening to apex.

Male Genitalia. Unknown.

Female Genitalia (Fig. 8). Ovipositor telescopic, with 3 membranous subdivisions; eighth sternum mostly setose on posterior half, shallowly emarginate medially along anterior margin near ostium, deeply emarginate medially along posterior margin; ductus bursae elongate and parallelsided, spinulate on anterior fifth; inception of ductus seminalis closer to ostium than to seventh segment; seventh tergum with several spinelike setae; corpus bursae large, with a moderately large platelike signum.

Type. Holotype, ♀, "THAILAND, Chiand Mai, Doi Chang Khian, (ca. 1250 m), 29 V 1983, H. Kuroko, S. Moriuti, Y. Aria & Y. Yoshiyasu", "Lepidopt. Esped. to Thai. 1983. Coll. Ent. Lab. Univ. Osaka Pref.", "♀ Genitalia Slide by DA 4317."

Etymology. The specific epithet is derived from the Latin *albus*, meaning white, and *fascia*, meaning band, referring to the white band of the forewing.

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REFERENCES

- Adamski, D. and R.L. Brown. 1989. Morphology and Systematics of North American Blastobasidae (Lepidoptera: Gelechioidea). Mississippi Entomological Museum, Mississippi 1: 1–70.
- Clarke, J.F.G. 1941. The preparation of slides of the genitalia of Lepidoptera. Bulletin of the Brooklyn Entomological Society 36: 149–161.
- Koenerup, A. and J.H. Wanschner. 1978. Methuen Handbook of Colour. Third Ed. Methuen and Co., Ltd., London. 252pp.
- Moriuto, S. and H. Kuroko. 1987. Microlepidoptera of Thailand. No. 1: 1–6p. *In*, No. 1: 1–184. Entomological Laboratory, University of Osaka Prefecture.

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